disclosure described herein are capable of operation in other sequences and/or arrangements than are described or illustrated herein.

What is claimed is:

1. A syringe pump for administering an agent to a patient, the syringe pump comprising:

a leadscrew;

a half-nut housing having a leadscrew void configured to receive the leadscrew therewithin;

a half nut disposed within the half-nut housing and having half-nut threads at an end adjacent to the leadscrew void, the half nut is slideable between an engagement position whereby the half-nut threads engage with threads of the leadscrew and a disengagement position whereby the half-nut threads are disengaged from the threads of the leadscrew, wherein the half nut includes a cam follower surface and a half-nut slot; and

a barrel cam disposed within the half-nut housing and configured to engage with the cam follower surface, the barrel cam includes a pin configured to fit within the half-nut slot, wherein the barrel cam is configured to rotate between a first position and a second position to actuate the half nut between the engagement position and the disengagement position, respectively.

2. The syringe pump according to claim **1**, further comprising a user-controlled actuator disposed on a plunger head assembly and configured for actuation by a user.

3. The syringe pump according to claim **2**, further comprising a shaft operatively coupled to the user-controlled actuator, wherein:

the shaft is elongated along a length thereby defining an axis along the length, and

actuation of the user-controlled actuator rotates the shaft around the axis.

4. The syringe pump according to claim **2**, wherein the user-controlled actuator is a knob operatively coupled to a shaft.

5. The syringe pump of claim **1**, further comprising a plunger head assembly comprising a pressure sensor configured to monitor a pressure of the agent being dispensed from a syringe.

6. The syringe pump of claim **1**, wherein the syringe pump further comprises a barrel flange clip configured to retain a barrel flange of a syringe.

7. The syringe pump of claim **1**, further comprising an optical sensor and a light source configured to detect a presence of a syringe.

8. The syringe pump according to claim **1**, wherein the syringe pump is configured to communicate with a monitoring client.

9. The syringe pump according to claim **1**, further comprising at least one set of redundant sensors, the at least one set of redundant sensors configured such that if part of a set of the at least one set of redundant sensors is compromised, the syringe pump is configured to function in a fail operative mode for at least a duration of a therapy, the set of the at least one set of redundant sensors is configured to monitor a volume being infused.

10. A syringe pump for administering an agent to a patient, the syringe pump comprising:

a plunger head assembly;

a user-controlled actuator configured for actuation by a user;

a shaft disposed within the plunger head assembly and operatively coupled to the user-controlled actuator, the shaft being elongated along a length thereby defining an axis along the length, wherein actuation of the user-controlled actuator rotates the shaft around the axis; and

a sliding block assembly configured for engaging with a leadscrew to move along the leadscrew in accordance with rotation of the leadscrew, wherein the sliding block assembly comprises:

a half-nut housing having a leadscrew void configured to receive the leadscrew therewithin;

a half nut disposed within the half-nut housing and having half-nut threads at an end adjacent to the leadscrew void, the half nut is slideable between an engagement position whereby the half-nut threads engage with threads of the leadscrew and a disengagement position whereby the half-nut threads are disengaged from the threads of the leadscrew, wherein the half nut includes a cam follower surface and a half-nut slot; and

a barrel cam disposed within the half-nut housing and configured to engage with the cam follower surface, wherein the barrel cam is configured to rotate between a first position and a second position to actuate the half nut between the engagement position and the disengagement position, respectively.

11. A syringe pump comprising:

a leadscrew;

a half-nut housing having a leadscrew void configured to receive the leadscrew therewithin;

a half nut disposed within the half-nut housing and having half-nut threads at an end adjacent to the leadscrew void, the half nut is slideable between an engagement position whereby the half-nut threads engage with threads of the leadscrew and a disengagement position whereby the half-nut threads are disengaged from the threads of the leadscrew; and

a barrel cam disposed within the half-nut housing and configured to engage with a cam follower surface, wherein the barrel cam is configured to rotate between a first position and a second position to actuate the half nut between the engagement position and the disengagement position, respectively.

12. A method for administering an agent to a patient, the method comprising:

positioning a leadscrew within a leadscrew void of a half-nut housing;

positioning a half-nut having half-nut threads, a cam follower surface, and a half-nut slot within the half-nut housing such that the half-nut threads are at an end adjacent to the leadscrew void;

sliding the half-nut between an engagement position whereby the half-nut threads engage with threads of the leadscrew and a disengagement position whereby the half-nut threads are disengaged from the threads of the leadscrew;

positioning a barrel cam including a pin configured to fit within the half-nut slot within the half-nut housing;

engaging the barrel cam with the cam follower surface; and